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(72) Inventor: **Fernando, John Susantha**  
**Coopersburg, Pennsylvania 18036 (US)**

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(74) Representative:  
**Watts, Christopher Malcolm Kelway, Dr. et al**  
**Lucent Technologies (UK) Ltd,**  
**5 Mornington Road**  
**Woodford Green Essex, IG8 0TU (GB)**

(71) Applicant: **LUCENT TECHNOLOGIES INC.**  
**Murray Hill, New Jersey 07974-0636 (US)**

(54) Digital microprocessor device having variable-delay division hardware

(57) The present invention is a variable-delay division (VDD) scheme implementable in hardware to execute signed and unsigned integer division and remainder operations in digital processor. The VDD scheme advantageously uses hardware utilized for multiplication to implement a 2-bits/cycle alignment step to iteratively align the divisor with the dividend. This speeds up the alignment phase of integer division. Quotient bits are produced at the rate of 1-bit/cycle using the well-known restoring scheme. For 32-bit 2's complement operands, the scheme has a delay less than a fixed-delay scheme for most operands.

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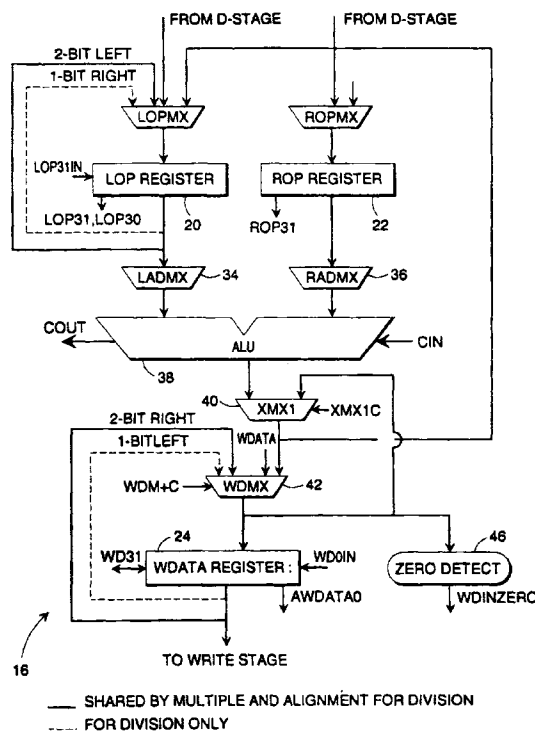


FIG. 2



European Patent Office

EUROPEAN SEARCH REPORT

Application Number  
EP 97 30 2938

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X Y	GB 2 268 604 A (MOTOROLA) * abstract; figure 2 *  * page 4, line 6 - line 23 * ---	1,5,9 2,3,6,7, 10,11	G06F7/52 G06F5/01
Y	PATENT ABSTRACTS OF JAPAN vol. 9, no. 113 (P-356), 17 May 1985 & JP 60 000537 A (FUJITSU) * abstract *	2,3,6,7, 10,11	
A	US 4 380 051 A (FETTE)  * column 5, line 50 - column 6, line 2 * ---	1-3,5-7, 9-11	
A	US 4 460 970 A (MCCLARY) * claim 2 *	1,5,9	
A	GB 2 196 453 A (PERFORMANCE SEMICONDUCTOR CORPORATION) * page 4, line 40 - line 62 * -----	2,3,6,7, 10,11	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			G06F
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		28 July 1997	COHEN B.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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